CPU Overclocking

go faster at no extra cost

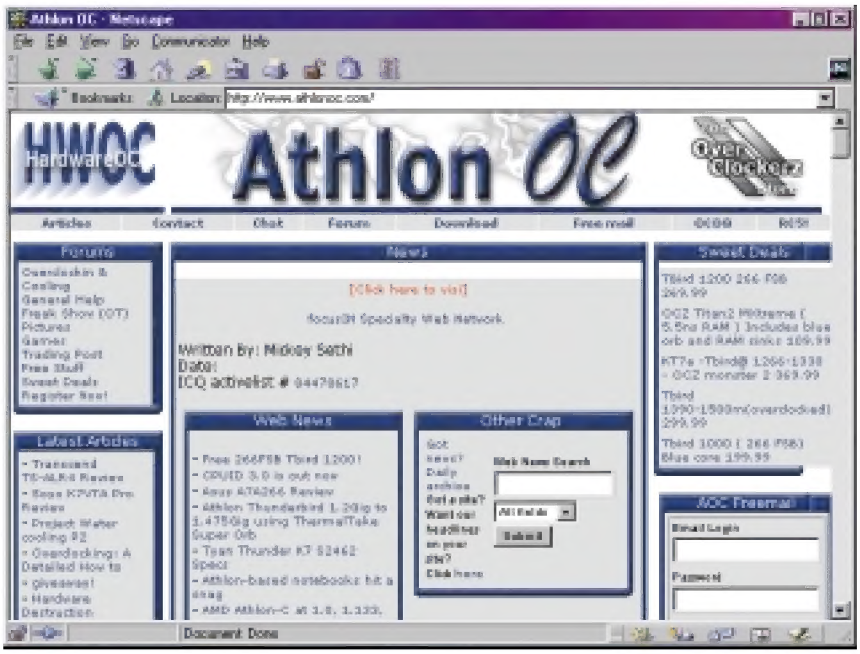
By Harry Baggen

With clock rates of 500 MHz and more, it would appear that modern CPUs have enough processing power for all imaginable applications. However, computer users always want everything to go even faster. With a few simple measures, you can get certain types of processors to run at higher clock rates without spending a single extra penny.

Overclocking is a sort of game, in which the objective is to get a processor that has been specified for a particular clock rate to run at a higher clock rate. This is frequently successful if the supply voltage for the core is modified and extra cooling is provided. After all, most processors are 'spec'ed' by their manufacturers such that there is still a reasonable amount of performance margin (at least 10% on average).

Manufacturers of CPUs are not happy when users overclock their products, so they use various measures to try to protect their processors against overclocking. Intel processors are fairly well protected, but the protection of AMD processors is fortunately somewhat simpler. In particular, the recent Athlon and Duron processors in the Socket-A version can easily be 'boosted'. This is because there are several jumpers on the ceramic package that determine the configuration. Anyone who wants to overclock his or her processor can quite simply cut through some of these jumpers or reconnect some of them (using a sharp pencil) in order to configure the processor for a different multiplication ratio or core voltage. An additional factor is that the new AMD CPUs have proven to be true speed demons, which can easily run 100 or 200 MHz faster than their normal clock rates.

Motherboard manufacturers have anticipated this trend, and the latest motherboards often offer various handy settings in the BIOS. These allow the values of factors such as the core voltage, frontside bus frequency and multiplier to be easily set without even opening up the enclosure. Most of the modern generations of motherboards with a VIA KT133 or KT133A chipset have such setting options in the BIOS, which makes overclocking easy.

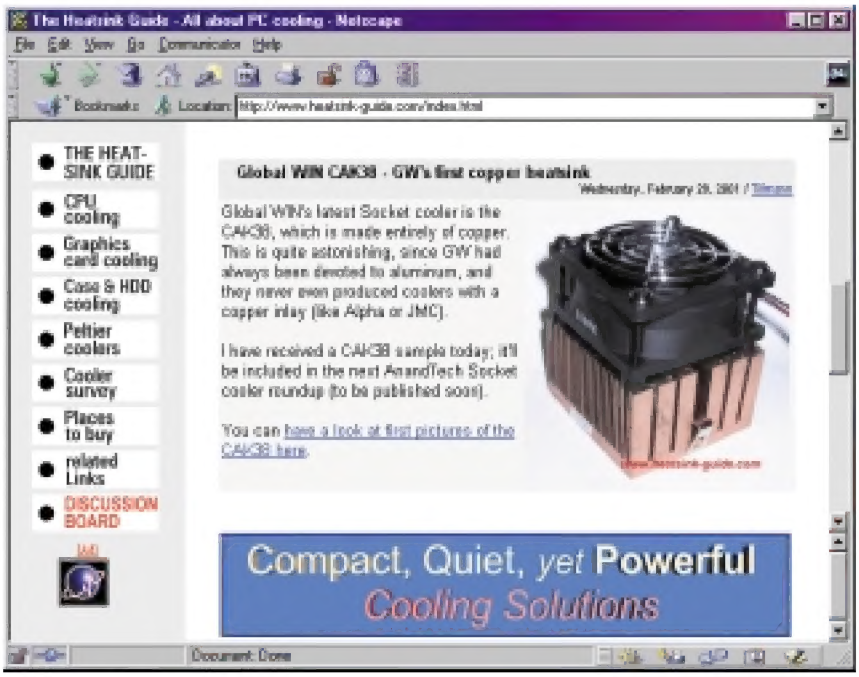


There are many sites on the Internet that are exclusively dedicated to the subject of overclocking.

The **Athlon OC** site [1] offers a series of interesting articles about overclocking and cooling Athlon and Duron CPUs. This site also has information on subjects such as water cooling and modifying the motherboard (in order to allow the core voltage to be increased). There is also a chat section, a forum section and a downloads section.

Overclockers.com [2] is also completely focussed on this subject. It has a collection of more than 700 entries related to overclocking, accessories, testing and so on. This site is of somewhat more general interest than Athlon OC, and you will also find articles about boosting graphics cards here.

Tweaktown [3] is preoccupied with a whole range of different measures



Global WIN CAK38 - GW's first copper heatsink

Wednesday, February 28, 2001 / Thomas

Global WIN's latest Socket cooler is the CAK38, which is made entirely of copper. This is quite astonishing, since GW had always been devoted to aluminum, and they never even produced coolers with a copper inlay (like Alpha or JMC).

I have received a CAK38 sample today; it'll be included in the next AnandTech Socket cooler roundup (to be published soon).

You can have a look at first pictures of the CAK38 here.

for 'souping up' a computer system. Tests of motherboards, graphics cards and the latest drivers, and of course all sorts of 'tweak' articles, can tempt even the most conservative computer owner to start tinkering with his or her system.

Overclocked Inside [4] is a German overclockers' site with a large amount of practical information. An especially good feature of this site is that you can obtain a graphic representation of the jumper arrangements that are required with an Athlon or Duron processor for a particular core voltage and frequency. Another nice feature is the test of all sorts of CPU coolers, with the possibility of listening to the fan noises for yourself.

Incidentally, large heatsinks with hefty fans are a necessary evil in the world of overclocking. Athlon and Duron processors are well known for their appetites for ampères and their need for good cooling assemblies, and overclocking simply aggravates the situation. If cooling is neglected, the silicon core will quickly die from overheating.

There are sites that have completely specialised in heatsinks, fans and thermal pastes. One of these is **The Heatsink Guide** [5], which is totally specialised in this subject. Here you will find information about cooling not only CPUs, but also graphic cards, hard disk drives and the computer enclosure itself.

2CoolTek [6] is actually a company that sells heatsinks and fans, but this site also has a very good comparison of many different types of heatsinks, including a large table that precisely reports which temperatures were measured with the tested coolers.

Would you like to try it for yourself? Cost should not present any real obstacle. A Duron will only set you back around 60 pounds, and once you have it you can experiment to your heart's content. Naturally, you must first have a motherboard that supports an Athlon or Duron processor (Socket A).

Finally, we should mention a number of overclocking FAQ's (Frequently Asked Questions) that can be found on the Net. Here you can read about the other people's experiences with overclocking. We have noted five interesting **FAQ lists** in our links summary [7].

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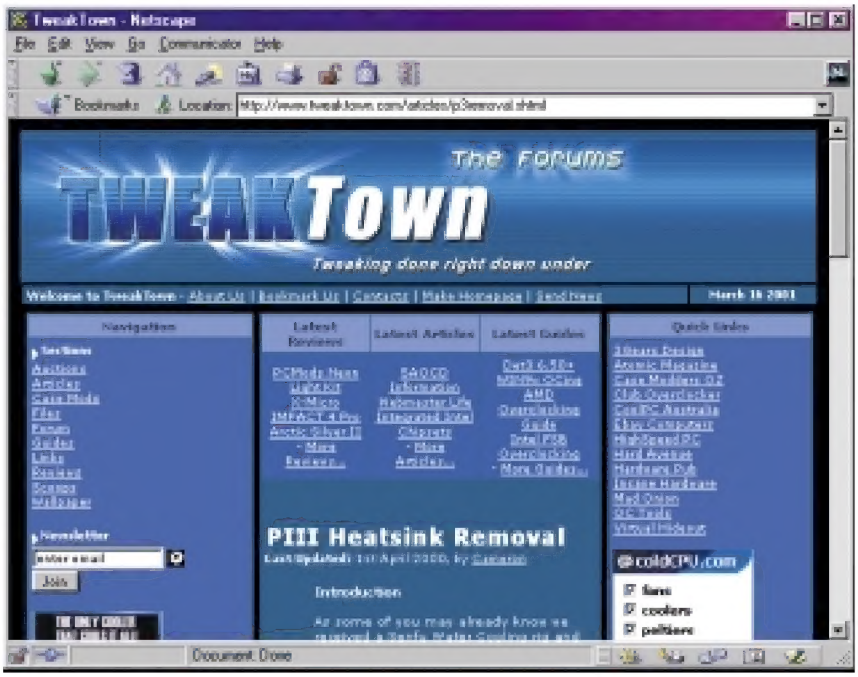

Website url's

(also available as hyperlinks at www.elektor-electronics.co.uk)

[1] Athlon OC:
http://www.athlonoc.com/

[2] Overclockers.com:
http://www.overclockers.com/

[3] Tweaktown:
http://www.tweaktown.com/

[4] Overclocked Inside:
http://www.ocinside.de/index_e.html

[5] The Heatsink Guide:
http://www.heatsink-guide.com/index.html

[6] 2Cooltek Socket heatsink test:
http://www.2cooltek.com/socket_test.html

[7] FAQ's:
Athlon overclocking FAQ:
http://www.tech-report.com/faq/athlon.x
Ninja Micro's Overclocking Forum:
http://www.ninjamicros.com/cgi-bin/Ultimate.cgi?action=intro
Hyperformance PC Overclocking FAQ:
http://www.hyperformance-pc.com/overclocking_faq.htm
Icrontic forums:
http://www.apushardware.com/vb/index.php
AMD-MB faqs:
http://www.amdmb.com/faqs.html